

IN THE CLAIMS:

Page 30, before Claim 1, delete:

CLAIMS

Page 30, before Claim 1, insert:

WHAT IS CLAIMED IS:

Please cancel claims 1-20 without prejudice or disclaimer, and substitute new claims 21-40 therefor as follows:

1-20. (Canceled)

21. (New) A method for guiding electromagnetic radiation, comprising:

providing a photonic crystal made of a bulk material having a first refractive index, said photonic crystal having, at least in a portion thereof, a periodic array of regions with a second refractive index different from the first refractive index, said regions having predetermined dimensions and said array having a predetermined period; and

feeding to said region of said photonic crystal an electromagnetic radiation having a wavelength in the fundamental photonic band of said photonic crystal, wherein said wavelength, the difference between said first and second refractive indices, the dimensions of said regions and the period of said array are so related that, starting from an isotropic distribution of wave vectors, having group velocity vectors which correspond to said wave vectors, of said electromagnetic radiation within a first angular range that is twice the angular extension of a first irreducible Brillouin zone of said photonic crystal, the group velocity vectors corresponding to said wave vectors being rearranged as concerns direction and

module so that at least 50% of said group velocity vectors are directed within a second angular range that is about one-third of said first angular range and a width at half-maximum of the distribution of the modules of said group velocity vectors is lower than about two-thirds of said second angular range.

22. (New) The method according to claim 21, wherein said width at half-maximum is lower than about one-half of said second angular range.
23. (New) The method according to claim 21 or 22, wherein said array of regions has a triangular, square or rectangular geometry.
24. (New) The method according to claim 23, wherein said regions have substantially a cylindrical shape.
25. (New) The method according to claim 24, wherein said array has an equilateral triangular geometry, said second angular range has an extension of $\pi/9$ and said width at half-maximum is lower than about 0.15 rad.
26. (New) The method according to claim 25, wherein said width at half-maximum is lower than about 0.122 rad.
27. (New) The method according to claim 24, wherein said array has a square geometry, said second angular range has an extension of $(\pi/6)$ and said width at half-maximum is lower than about 0.224 rad.
28. (New) The method according to claim 27, wherein said width at half-maximum is lower than about 0.164 rad.
29. (New) The method according to claim 24, wherein said array of regions is defined by an array of holes.

30. (New) A device for guiding electromagnetic radiation, comprising:

a photonic crystal made of a bulk material having a first refractive index, said photonic crystal having, at least in a portion thereof, a periodic array of regions with a second refractive index different from the first, said regions having predetermined dimensions and said array having a predetermined period;

an optical source optically linked to said region of said photonic crystal and suitable to generate an electromagnetic radiation having a wavelength in the fundamental photonic band of said photonic crystal, said wavelength being so related to a difference between said first and second refractive indices, to dimensions of said regions and to a period of said array that, starting from an isotropic distribution of wave vectors, having group velocity vectors which correspond to said vectors, of said electromagnetic radiation within a first angular range that is twice an angular extension of a first irreducible Brillouin zone of said photonic crystal, the group velocity vectors corresponding to said wave vectors being rearranged as concerns direction and module so that at least 50% of said vectors are directed within a second angular range that is about one-third of said angular range and a width at half-maximum of the distribution of the modules of said vectors is lower than about two-thirds of said second angular range.

31. (New) The device according to claim 30, wherein said width at half-maximum is lower than about one-half of said second angular range.

32. (New) The device according to claim 30 or 31, further comprising an optical waveguide interposed between the optical source and a portion of the photonic crystal for feeding thereto said electromagnetic radiation.

33. (New) The device according to claim 32, wherein said optical waveguide is an integrated optical waveguide.
34. (New) The device according to claim 32, wherein said optical waveguide is an optical fibre.
35. (New) The device according to claim 32, wherein said regions have substantially a cylindrical shape.
36. (New) The device according to claim 35, wherein said array of regions is defined by an array of holes.
37. (New) The device according to claim 35, wherein said regions are aligned along an axis and wherein said portion of said photonic crystal comprises a core layer extending in a plane perpendicular to said axis and interposed between a first and a second cladding layer, said first and second cladding layers having a refractive index lower than that of said core layer in order to confine said electromagnetic radiation in said core layer.
38. (New) The device according to claim 37, further comprising a substrate layer of a dielectric material and a decoupling layer interposed between said substrate layer and said second cladding layer.
39. (New) The device according to claim 38, wherein said waveguide is realized on said substrate layer and comprises a ridge waveguide, a rib waveguide or a photonic crystal waveguide having a linear defect region.
40. (New) A device for guiding electromagnetic radiation, comprising a waveguide optically coupled to a photonic crystal having a regular periodicity.